

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023191 A3

(51) International Patent Classification⁷: G02F 1/1335,
G09G 3/36

(21) International Application Number:
PCT/KR2003/001719

(22) International Filing Date: 26 August 2003 (26.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2002-0053635
5 September 2002 (05.09.2002) KR

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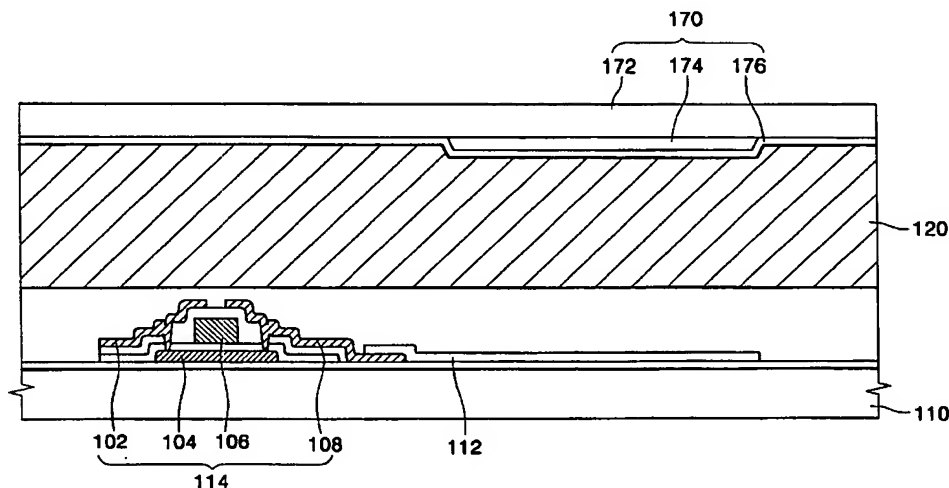
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(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK,
LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ACTIVE MATRIX DRIVING DISPLAY DEVICE AND IMAGE DISPLAYING METHOD USING THE SAME



(57) Abstract: LCD device includes two substrates (110, 172), a first (174) and second color filters, two liquid crystal layers (120). The first color filters (174) are formed on portions of the second substrate (172) corresponding to border area. The second color filters are formed on portions of the second substrate (172) corresponding to the display area except the border area. A first liquid crystal layer (120) between the first and the second substrate (110, 172) is comprised in border area, and a zero electric field is formed on the first liquid crystal layer so as to completely transmit light incident into the first liquid crystal layer therethrough. A borderline having various colors can be displayed by forming various patterns of color filters (174) having various colors on portions of the second substrate (172) corresponding to the border area under normally white mode, thereby producing picture frame effect while images are displayed on the screen.

WO 2004/023191 A3



Published:

— *with international search report*

(88) Date of publication of the international search report:

24 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR 03/01719-0

CLASSIFICATION OF SUBJECT MATTER

IPC⁷: G02F 1/1335, G09G 3/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁷: G02F, G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 10 187099 A (CASOI COMPUT) 14 July 1998 (14.07.98) fig.1-8; [0031] - [0050; [0061] - [0089].	1,6,9- 11,13,15,16 4,17-19,20-22
Y A	EP 1022604 A2 (CANON) 26 July 2000 (26.07.00) column 4, line 31 - column 5, line 49; fig. 4,5.	1,6,9- 11,13,15,16 3,4
A	WO 01/57838 A1 (SEIKO EPSON) 9 August 2001 (09.08.01) fig.1-4,8; [0044].	1,17,19-21

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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„&“ document member of the same patent family

Date of the actual completion of the international search

11 December 2003 (11.12.2003)

Date of mailing of the international search report

11 February 2004 (11.02.2004)

Name and mailing address of the ISA/AT

Austrian Patent Office

Dresdner Straße 87, A-1200 Vienna

Facsimile No. 1/53424/535

Authorized officer

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Telephone No. 1/53424/320

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 03/01719-0

Patent document cited in search report			Publication date	Patent family member(s)			Publication date
EP	A	1022604	2000-07-26	EP	A	1378785	2004-01-07
				DE	D	69333192D	2003-10-09
				DE	D	69333137D	2003-09-11
				DE	T	69330318T	2001-10-31
				DE	D	69330318D	2001-07-19
JP	A	10187099		none			
		A2					
WO	A	157838		none			